THE SYSTEMATIC POSITION OF THE GENERA *APHILEUS, MACROMALOCERA, GLYPHOCHILUS* AND *CAMPSOSTERNUS* (COLEOPTERA: ELATERIDAE)

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Abstract

An investigation into the generic relationships of some Elateridae found in Australia, New Guinea and New Zealand has shown that the systematic position of certain genera should be changed. The New Zealand genera are not discussed. This note reassigns the genera *Aphileus, Macromalocera, Glyphochilus* and *Campsosternus* and presents a description of the tribe or subfamily in which they are herein placed.

Introduction

A study of the broad generic relationships of the Elateridae found in Australia, Papua New Guinea, Irian Jaya and New Zealand has shown that the systematic position of certain genera, as given by Neboiss (1956 and 1961) who followed Schenkling (1925, 1927) and Schwarz (1906), should be changed. The external morphological features discussed in the text and descriptions or characterisations of the higher taxa show that certain genera require tribal and subfamily reassignment.

This paper changes the systematic position of certain genera as follows: *Aphileus* (Ctenicerini to Pseudomelanactini), *Macromalocera* (Denticollini to Conoderini), *Glyphochilus* (Conoderini to Ampedini), *Campsosternus* (Oxynopterinae to Campsosterninae). The changes made here will be followed by the author in a revisionary series on the classification of the Elateridae.

Subfamily PYROPHORINAE Candèze, 1863

The elaterid subfamily Pyrophorinae may be characterised by possession of one or more setae at the base of the claws. A few species have lost this feature and must be recognised by general shape, however, this need not be of concern in the present paper.

Tribe PSEUDOMELANACTINI Arnett, 1967

Adult: Frons more or less inflexed; mouthparts inferior; frontal carina absent; antennae and tarsi not received in deep grooves; second antennal segment appreciably smaller than third, of eleven segments; prosternal sutures excavated in front, vaguely impressed along their length, prosternal lobe normally arcuate; meso and metasternum with distinct suture; scutellum shield-shaped, never cordate; tarsi simple; claws simple, setae present at base.

Aphileus Candèze, 1857

This genus was previously in the Denticollinae (Ctenicerini) or Ctenicerinae as listed in Neboiss (1956, 1961). Adults of this genus have a seta on the base of each claw. The larva (Neboiss, 1959) has a toothless mandible and a characteristic pyrophorine ninth abdominal segment. These attributes suffice to

place *Aphileus* in the Pyrophorinae. As regards the tribe, it is noticeable *Aphileus* lacks a groove for the antennae and has a very short second ante segment and narrow tarsal segments. These characters fit the Pseudomelana and placement in this tribe (under the current definition, Arnett, 1967) fore seems to be correct. The Pseudomelanactini have been hitherto limit monobasic North American genus, *Pseudomelanactes* Mathieu, 1961.

Tribe CONODERINI Fleutiaux, 1919 (1859) (MONOCREPIDIITES Candèze, 1859)

Adult: Frons more or less inflexed or flat, curved downwards; mouth inferior; frontal carina well developed above and between antennae, more straight and well separate from labrum; antennae and tarsi not received in grooves; prosternal sutures closed, prosternal lobe normally arcuate; mes metasternum with distinct suture; scutellum shield shaped, never cordate with fourth segment broadened or lobed beneath; claws simple, setae p base.

Macromalocera Hope, 1834

The adults of this genus have a basal seta(e) on each claw. There grooves for the antennae and the fourth tarsal segment is broadened here This seems sufficient justification to place *Macromalocera* in the Conoderi not in the Denticollinae (Denticollini as listed in Neboiss, 1956, 196 appearance they seem similar to certain species of *Conoderus* Eschscholtz from the American south-west.

This change, combined with the reassignment of *Glyphochilus* (p makes it necessary to present the following modifications to the l Australian Elateridae in the Conoderini (Conoderinae by Neboiss, 1956, 1

Aeoloderma Fleutiaux, 1928
Aeolus Eschscholtz, 1829
Conoderes Eschscholtz, 1829
Drasterius Eschscholtz, 1829
Heteroderes Latreille, 1834
Macromalocera Hope, 1834

Neboiss (1961, p.15) followed Van Zwaluwenburg (1959) in assi *Heteroderes* subgeneric rank within *Conoderes*. However, Binaghi (194 studied the Conoderini quite extensively and concluded that the two taxa of equal rank. This was followed in 1972 by Leseigneur and is adopted he the latest opinion.

Binaghi also placed *Drasterius* in the Conoderini on the basis of the formation of the genitalia and the prosternal sutures. Leseigneur concurs this and is followed here. Neboiss placed it in the Elaterinae in 195 changed this to the Ampedinae in 1961 (without comment on *Drasterius*).

Subfamily ELATERINAE Leach, 1815

The elaterid subfamily Elaterinae is characterised as follows: The he oval and deflexed with inferior mouthparts, the mesocoxae are open b

mesepimeron and mesepisternum and there is a definite suture between the mesosternum and metasternum. If a frontal ridge is present it is often absent in the middle or bent down towards the labrum and is sometimes protruding.

Tribe AMPEDINI Fleutiaux, 1947

Adult: Head capsule oval, deflexed; mouthparts inferior; frontal carina complete, arcuate, bending down between antennae to meet or at least close towards labrum; antennae eleven segmented, serrate; prothorax more or less normally (gradually) narrowed anteriorly; prosternal sutures entire or excavated in front, double or single; scutellum shield-shaped, never cordate; mesocoxae open to both mesepimeron and mesepisternum; meso and metasternum distinct, joined by a definite suture; tarsi simple; claws simple, without basal setae.

Glyphochilus Candèze, 1859

This genus was last placed in Conoderinae by Neboiss (1956) who followed Schenkling's Catalogue (1925). I must disagree with this arrangement, not only because the claws lack setae at the base, but also because the frons is bent down towards the labrum, the head capsule seems to be oval and deflexed and the tarsi and claws are simple. All these features would appear to place *Glyphochilus* in the Ampedini.

The Australian genera of Ampedini may now be listed as follows:—

Ampedus Dejean, 1833
Elastrus Candèze, 1859
Glyphochilus Candèze, 1859
Megapenthes Kiesenwetter, 1858
Melanoxanthus Dejean, 1833 (nec. Eschscholtz, 1836)

CAMPSOSTERNINAE Fleutiaux, 1927
(SEMIOTINAE Golbach, 1970) **new synonym**

Adult: Head more or less oval, deflexed; mouthparts inferior; antennae of male serrate; frons deeply foveate medially; pronotum explanately broadened and flattened; prosternum normally arcuate anteriorly; prosternal spine normally elongate; mesosternum and metasternum connate, suture indistinct or absent; mesocoxae open to mesepimeron and mesepisternum; scutellum shield-shaped, never cordate; elytra acuminate to apex, striate, spinose and usually mucronate at apex; claws simple, without setae; tarsi simple, without pads or lobes.

Campsosternus Latreille, 1834

This is a widespread genus, ranging from India to China to New Guinea. The numerous specimens I have seen lack setae on the claws and have no suture or evident union between the mesosternum and metasternum. The latter feature is characteristic of the Chalcolepidiini (Pyrophorinae) in which this genus was placed for many years. Lately, Fleutiaux (1947) and Ôhira, in several papers, have placed it in the Oxynopterinae (Ôhira 1970 for example). However, the related *Semiotus* Eschscholtz, 1829, and two other genera, all from the Americas, were recently (Golbach, 1970) placed in a new subfamily. The characters just cited leave little doubt that *Campsosternus* belongs to this group.

It happens though, that Fleutiaux (1927) used the name Campsosterninae cover this genus, *Oxynopterus* and three other genera. Fleutiaux incorrectly listed the name (Oxynopterides, Candèze, 1857) as a synonym, in any case he employed it (correctly) in 1947, and Campsosterninae was in effect dropped as a junior synonym. He also mentioned *Semiotus*, about which he *felt* inclined to keep apart due to general appearance and the fact that the head is not armed with spines. I do not regard such a tentative statement as sufficient evidence to warrant the separation of *Semiotus*, since it fits the diagnostic features now considered to be important. If Golbach's concept is to be applied, as it is here, then *Campsosternus* must join *Semiotus* et al. in a separate subfamily, and the name Campsosterninae is here applied as the oldest available family-group name and not the name Semiotinae, herein relegated to the status of a junior synonym (**new synonym**). The Oxynopterinae are consequently limited to four genera of Asiatic-African origins (*Oxynopterus* Hope, *Siccampsus* Fleutiaux, *Sinuaria* Jordon and *Ceropectus* Fleutiaux).

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NOTES ON THE DISTRIBUTION OF AUSTRALIAN ODONATA

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Watson (1974) answered a need of all those interested in Australian Odonata by publishing a current checklist of all known species with a guide to their distribution.

The first of the following records constitutes an addition to those species listed as occurring in Watson's Region 5, SEN (south-eastern New South Wales) and the second, an addition to Region 6, NEN (north-eastern New South Wales).

1. *Austrogynacantha heterogena* (Tillyard). One male specimen was collected by the author at M.V. light on 20th February, 1974 at Ryde, Sydney.
2. *Rhyothemis phyllis chloe* Kirby. One female specimen was collected at Coffs Harbour, N.S.W. on 12th January, 1972 by M.S. Moulds. The specimen is in the author's collection.

In addition I wish to correct three inaccuracies in my 1972 paper, "A list of the dragonflies (Odonata) collected in the Northern Territory":— *Pseudagrion papuense* Tillyard. The specimens listed under this name have since been correctly identified as *Pseudagrion microcephalum* (Rambur). The specimens listed as *Gynacantha rosenbergi* Brauer have in fact proved to be an, as yet, undescribed species (*Gynacantha* sp. "n" in Watson, 1974). For pointing out the above misidentifications I am indebted to Dr J.A.L. Watson, C.S.I.R.O., Canberra. The sub-heading "Family Corduliidae" should read "Family Libellulidae".

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